

**REMARKS**

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

**Disposition of Claims**

Claims 1-30 were pending in the present patent application. By way of this reply, claims 2, 12, and 22 have been cancelled without prejudice or disclaimer. Accordingly, claims 1, 3-11, 13-21, and 23-30 are pending in the present application. Claims 1, 11, and 21 are independent. The remaining claims depend, either directly or indirectly, from claims 1, 11, and 21.

**Claims Amendments**

Claims 1, 3-5, 13-16, 23-25, and 29 have been amended for clarification. No new matter has been added by way of these amendments as support for these amendments may be found, for example, in paragraph [0036] of the Instant Specification.

**Rejections under 35 U.S.C. §112**

Claims 1 and 11-29 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner asserts the term “amortizing” recited in the claims is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. By way of this reply, claims 12 and 22 have been cancelled and thus the rejection is moot as to those claims. As for the remaining claims, for the reasons set forth below, the rejection is respectfully traversed.

Applicant respectfully asserts the term “amortizing” recited in the claims is supported by the specification. As recited in the instant specification, amortizing a critical path denotes balancing the workload of multiple processors in order to minimize the difference in computations between the critical path and the shortest path during a cycle of a cycle based simulation. (*See, e.g.*, Instant Specification at paragraphs [0009] and [0010]). Such amortizing of the workload (*i.e.*, critical path computations), where the workload is balanced by prorating the workload in various installments, is similar to amortizing in the financial world. Thus, Applicant respectfully asserts the term “amortizing” as recited in the claims and read in light of the specification would be clear to one skilled in the art. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1 and 11-29 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner asserts the term “amortizing” recited in the claims does not pertain to the genre of electronics or science. By way of this reply, claims 12 and 22 have been cancelled and thus the rejection is moot as to those claims. As for the remaining claims, for the reasons set forth below, the rejection is respectfully traversed.

Applicant respectfully asserts the term “amortizing” recited in the claims is definite and supported by the specification. As described above, amortizing a critical path, read in light of the specification, denotes balancing the workload of multiple processors in order to minimize the difference in computations between the critical path and the shortest

path during a cycle of a cycle based simulation. (*See, e.g.*, Instant Specification at paragraphs [0009] and [0010]). Thus, Applicant respectfully asserts the term “amortizing” as recited in the claims and read in light of the specification would be clear to one skilled in the art. Accordingly, withdrawal of this rejection is respectfully requested.

### **Rejections under 35 U.S.C. §103**

Claims 1-6, 8-16, 18-26, and 28-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,095,454 issued to Huang (hereinafter “Huang”) in view of U.S. Patent No. 6,339,837 issued to Li (hereinafter “Li”). By way of this reply, claims 2, 12, and 22 have been cancelled and thus the rejection is moot as to those claims. As for the remaining claims, for the reasons set forth below, this rejection is respectfully traversed.

Independent claim 1 has been amended to recite, in part, “unrolling a data flow graph representing said circuit into a plurality of clock cycles; and simulating said circuit in said plurality of clock cycles on a computer, wherein simulating further comprises reducing a difference between said critical path and a shortest path in said data flow graph”. Independent claims 11 and 21 have been amended in a similar manner.

Huang discloses a method and apparatus for verifying timing during simulation of digital circuits. Further, one objective of Huang’s method and apparatus is to provide two paths through the circuitry which are the minimum (“shortest”) and maximum (“critical”) paths from input node to output node. (*See, e.g.*, Huang at column 2, lines 28-37 and column 5, lines 45-55). However, Huang is silent on at least *reducing the difference between the critical path and the shortest path* as recited in amended independent claims 1, 11, and 21.

The Examiner has attempted to equate what is disclosed in Huang with the limitations of amended independent claim 1. (*See* Office Action dated March 22, 2005). However, Huang discloses finding the shortest and critical paths to check for timing violations (*See, e.g.*, Huang at column 5, lines 45-55), *not* to reduce a difference between paths as recited in the claims. Thus, Huang does not teach or suggest all limitations of amended independent claims 1, 11, and 21.

Li discloses a method for verifying a digital circuit design in a hardware description language using a verification structure and a verification engine. Li, like Huang, does not teach or suggest reducing the difference between the critical path and the shortest path as recited in amended independent claims 1, 11, and 21. In fact, Li is solely focused on verifying the functional correctness of the design. (*See, e.g.*, Li at column 2, lines 39-53). Li is totally silent regarding the critical path, the shortest path, and reducing the difference between them as recited in the claims. Thus, Li does not teach what Huang lacks. Thus, Li does not teach or suggest all limitations of amended independent claims 1, 11, 21.

Huang and Li, whether viewed separately or in combination, fail to teach or suggest all the limitations of independent claims 1, 11, and 21. Thus, claims 1, 11, and 21 are patentable over Huang and Li. Claims 3-6, 8-10, 13-16, 18-20, 23-26, and 28-30 depend, either directly or indirectly, from claims 1, 11, and 21 and are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 7, 17, and 27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of U.S. Patent No. 6,856,950 issued to Abts et al. (hereinafter "Abts")

and in further view of Li. For the reasons set forth below, this rejection is respectfully traversed.

Claims 7, 17, and 27 depend directly from amended independent claims 1, 11, and 21. As discussed above, amended independent claims 1, 11, and 21 are patentable over Li and Huang. Abts discloses a system and method of verifying an electronic system expressed as a logic design. Tests to be run against the logic design are placed within a diagnostic program, and the results of the test are captured and validated against expected results. (*See, e.g.,* Abts at Abstract). However, like Li and Huang, Abts does not teach or suggest all the limitations of amended independent claims 1, 11, and 21. Abts, like Li and Huang, is silent regarding critical path, shortest path and reducing the difference between them as recited in the claims. Abts is focused on verifying the functional correctness of a logic design, and focuses on abstraction to mask the complexity and implement details during the verification phase. Thus, Abts is clearly not directed towards amortizing critical path computations as recited in the claims. Thus, independent claims 1, 11, and 21 are patentable over Abts, Li, and Huang.

Abts, Li, and Huang, whether viewed separately or in combination, fail to teach or suggest all the limitations of independent claims 1, 11, and 21. Claims 7, 17, and 27 depend directly from claims 1, 11, and 21 and are allowable for at least the same reason. Accordingly, withdrawal of this rejection is respectfully requested.

## **Conclusion**

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues

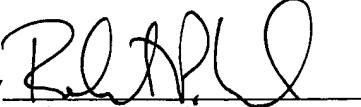
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arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 16159/089001; P4777).

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Respectfully submitted,

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Attachments

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